

ones are usually mere points. When seen with a lens, or even at a distance from the eye suited to distinct vision there does not appear to be any regular structure or arrangement of the bright points. But if the surface is so held as to be a little beyond the place of distinct vision, and at the same time, turned around in such a way as to reflect always a strong light to the eye, either skylight or lamplight, there appear lines of points across the polished surface of the stone, which suggest very strongly the Widmanstaetten figures on metallic meteorites. At times, as the stone is turned, no lines can be detected. Again one set of parallel lines or two sets crossing each other become visible. Some of the sets are very sharply manifested, and some are so faint as to leave one in doubt whether the lines are real or only fancied. There are on the surface in question six or eight of these sets of lines.

A second surface was ground nearly parallel to the first, at about one centimetre distant from it, and like lines appeared on this parallel surface. Some of the lines, but not all of them, corresponded in direction in the two surfaces. Four more surfaces approximately at right angles to the first surface, and corresponding to the faces of a right prism, were then ground, and upon these surfaces the like sets of lines appear with more or less distinctness.

A slab of a Pultusk stone 6 × 7 centimetres shows over its entire surface like markings. Something like a curvature of the lines appears in one instance, but in general the lines run straight from side to side of the slab. The slab is six millimeters in thickness, and most of the sets of lines have the same directions upon the two sides.

A Hesse stone, a small slice from the Wold Cottage stone, one from Sierra di Chaco, one from a Sienna stone, a fragment from the Rockwood stone, and a slice from the Rensselaer Co. stone, all show with more or less clearness the like markings. Of three microscope slides of the Fayette Co. meteorite one shows them clearly, a second shows traces of them, the third not at all.

A considerable number of the ground surfaces of meteoric stones in the Peabody Museum also show these markings. For example, a triangular surface of a Weston stone, 8 or 10 centimetres to each side, exhibits them very well.

These markings are such as we might expect if the forces which determine the crystallisation of the nickel-iron of the iron meteorites also dominated the structure of the rock-like formations of the stony meteorites and the distribution therein of the iron particles. The relation of quartz crystals to the structure of graphic granite is naturally suggested by these meteorite markings.

H. A. NEWTON.

THE LATE THOMAS DAVIES, F.G.S.

MR. THOMAS DAVIES, who died on December 21 last, was born on December 29, 1837, in the neighbourhood of London, and was the son of Mr. William Davies, F.G.S., of the Geological Department of the British Museum. His early education was of a very elementary character, and the period of his school-life was brief: finding town-life irksome, and yearning for freedom and adventure, he took to the sea at the age of fourteen, and during the next four years led a roving life, visiting China, India, and various parts of South America. He was then prevailed upon by his father to adopt a more settled mode of existence, and on the separation of the Department of Mineralogy from that of Geology was appointed in 1858 a third-class attendant at the British Museum under Prof. Maskelyne, to whom the care of the minerals had been assigned; in the following year he added to his responsibilities by marriage.

During the next nine years, save for a short interval

when Dr. Viktor von Lang was an assistant in the Department, Mr. Davies was the sole helper of Mr. Maskelyne in the arrangement and examination of the mineral collections; during this time Mr. Maskelyne effected a thorough change in the classification and arrangement of the minerals, and in labelling with localities the large number of specimens that were without any descriptions except what could be traced out in old catalogues. In this work, and in the cleaning and arranging some tons of specimens, of which many were entirely valueless, the patient and intelligent aid of "young Davies" alone rendered it possible to carry out the preliminary operations. As the collection grew into orderly arrangement, the registration and labelling of specimens was entrusted to him by Mr. Maskelyne. It was thus that he gradually acquired an eye-knowledge of minerals which has rarely, if ever, been surpassed. His perception of the peculiarities of a specimen was remarkably quick, while his remembrance of individual specimens was almost marvellous. It was particularly in the habit, the locality, the associations and modes of occurrence of mineral species that he concentrated his interest; and to his knowledge in this direction his earlier training, under the eye of Mr. Maskelyne, in the labelling of the minerals, accumulated in the cases and drawers of the collection, very largely contributed.

In the early years of Mr. Davies's museum life Mr. Maskelyne was further engaged in the study of thin sections of meteorites, and initiated Mr. Davies into a knowledge of the microscopic characters of rock-forming minerals, a mode of investigation then almost unknown. In this direction his quickness of perception and excellence of memory had full scope for play, and Mr. Davies soon became extremely skilful in the microscopic determination of minerals in rock-sections, and in the recognition of peculiarities of rock-structure. Few practical petrologists approached him in this faculty.

Nor did he neglect to improve his general education. With this end in view he attended the evening classes at the Working Men's College in Great Ormond Street, and in the course of time acquired a knowledge of both French and German. He was also familiar with plants and fossils, a knowledge largely derived from his father.

His remarkable qualifications attracted the early attention of Mr. Maskelyne, and in 1862 were officially recognised in his promotion by the trustees from the grade of attendant to that of transcriber or junior assistant. In 1880 he was promoted to the grade of first-class assistant. By a remarkable coincidence his father, Mr. William Davies, who had long been renowned for his large practical knowledge of important branches of palæontology, and especially of fossil fishes, and had likewise begun museum life as an attendant, obtained the same promotion on the same day. In the same year Mr. Davies was awarded the balance of the proceeds of the Wollaston Fund by the Council of the Geological Society as a testimony of the value of his researches in mineralogy and lithology. Still later, in 1889, the name of *Daviesite* was given to a new mineral "in honour of Mr. Thomas Davies, who has now been associated during upwards of thirty years with the British Museum Mineral Collection, and whose mineralogical experience and Breithauptian eye have ever been willingly placed at the service, not only of his colleagues, but of every one who has been brought into relationship with him."

He became a Fellow of the Geological Society in 1870, and was an early member of the Mineralogical Society of France.

His published work was not voluminous; it relates almost exclusively to the microscopic characters of the pre-Cambrian rocks. He contributed, however, the bulk of the articles on mineralogy and petrology for "Cassell's Encyclopædic Dictionary," and for some years edited the *Mineralogical Magazine*.

Mr. Maskelyne, for whom he was right-hand man, and almost sole working helper during upwards of twenty years, looks back with fond regret on the uninterrupted happiness of their association. According to my own experience of the last fifteen years, he was an excellent colleague, always cheerful, good-tempered, and kind-hearted, ever ready to help in any direction, however much it might interfere with the particular work he had immediately in hand. At home he was an enthusiastic gardener; wet or fine, absolutely reckless of weather, he was at work from early sunrise, and could boast the possession of one of the best managed gardens in the neighbourhood. His love of fresh air and the bustling east wind never left him; even after recovery from the long illness which two years ago had taken him to the verge of the grave, he did not hesitate to show the greatest contempt for the protection of an umbrella, and notwithstanding the remonstrances of his friends, might still be occasionally seen enjoying the beating of the wind and rain on his unprotected face.

He was an Original Member of the Mineralogical Society, and Foreign Secretary for several years preceding his death.

Mr. Davies leaves a widow and nine children to mourn his loss.

L. FLETCHER.

NOTES.

AT the last meeting of the Council of the Mineralogical Society, it was resolved to initiate a "Thomas Davies Memorial Fund" on behalf of the widow and children of the late Mr. Thomas Davies, F.G.S., of the British Museum. The following gentlemen have consented to act as an Executive Committee:—Prof. N. S. Maskelyne, F.R.S. (chairman), Dr. Hugo Müller, F.R.S. (treasurer), Mr. H. A. Miers, F.G.S. (secretary), Prof. T. G. Bonney, F.R.S., Mr. L. Fletcher, F.R.S., Dr. Henry Hicks, F.R.S., W. H. Hudleston, F.R.S., Prof. J. W. Judd, F.R.S., Mr. F. W. Rudler, F.G.S., Mr. F. Rutley, F.G.S., Rev. Prof. T. Wiltshire, F.G.S., Dr. Henry Woodward, F.R.S. Subscriptions for the fund should be sent to Dr. Hugo Müller, 13 Park Square East, Regent's Park, London, N.W.

AN extra meeting of the Chemical Society will be held on February 20, at 8 p.m., the anniversary of the death of Herman Kopp, when a lecture will be delivered by Prof. T. E. Thorpe, F.R.S. Lord Playfair will be in the chair.

AN International Botanical Congress is to be held during the Columbian Exposition at Chicago. Prof. C. E. Bessey will receive communications on the subject.

M. P. DUCHARTIE has been elected president, and M. L. Guignard first vice-president, of the Botanical Society of France for the year 1893.

THE annual public meeting of the University College Chemical and Physical Society will be held at University College, Gower Street, on Friday, February 24. The chair will be taken at eight o'clock by Prof. F. T. Roberts, and Prof. Watson-Smith will deliver an address on diseases incident to work-people in chemical and other industries.

MR. THOMAS BRYANT, president of the Royal College of Surgeons, delivered the Hunterian oration on Tuesday afternoon in the theatre of the college, in the presence of the Prince of Wales and the Duke of York and a large and distinguished company. Mr. Bryant began by thanking their Royal Highnesses for their presence on the special occasion of the centenary of the death of John Hunter, the great founder of scientific surgery. In the course of his oration Mr. Bryant said that the whole world of vegetable and animal life was Hunter's subject, but that

his main objects were the improvement of surgery by the elucidation of pathology; the examination of the causes which determine any departure from the normal type, whether of form or function; and the study of the means which nature adopts for the healing of wounds and the repair of injuries. It was one of his special merits that he raised surgery out of the position of a poor art, based on empirical knowledge and practised too much as a trade, to establish it firmly as a high and elevating science, at the same time raising its practitioners in the social scale, and doing as much for medicine as for surgery, for he considered them inseparable. He made the profession scientific by basing it upon the widest knowledge of the structure and functions of all living things, and educed therefrom laws and principles for the guidance of future generations in their study and treatment of disease in any of its forms. This alone should render him worthy of the thanks of civilised mankind.

MR. GEORGE MATHEWS WHIPPLE, whose death we briefly recorded last week, had done much solid and valuable work in various departments of physical science. Among the subjects in which he was especially interested were wind force and wind velocities, and throughout the greater part of his life, as the *Times* has said in a brief sketch of his career, he was constantly carrying on experiments with a view to determine wind force and to find out what were the best instruments for securing accurate results. He improved the Kew pattern magnetic instruments; he designed, among other instruments, the apparatus for testing the dark shades of sextants; and at various periods he was associated with Captain Heaviside, Major Herschel, and General Walker, in carrying on pendulum experiments for the determination of the force of gravity. The magnetic part of the report of the committee appointed by the Royal Society to investigate the Krakatoa eruption and the subsequent phenomena was prepared by Mr. Whipple, and valuable papers were from time to time submitted by him to the Royal Society and the Royal Meteorological Society. He was fifty years of age at the time of his death. He entered the Kew Observatory in 1858, became magnetic assistant in 1862, and was appointed superintendent in 1876. This office is one of great and growing importance, and we trust that a capable successor may be found. The Kew Observatory is the central standardising station of the Meteorological Office, and numerous magnetical observatories in other countries are similarly connected with it. New instruments are tested there, and experiments are made, and it has now grown into an institution where the verification of scientific instruments of many kinds, including thermometers, sextants, telescopes, watches, and recently photographic lenses, is carried on on a large scale, as described in the annual report of the Kew committee to the Royal Society.

THE Rev. F. O. Morris died at Nunburnholme, in Yorkshire, on Friday last, at the age of eighty-two. He was well-known as a popular writer on science, and did much to create and foster interest in some branches of natural history, especially in ornithology. Among his many books were "A History of British Birds," issued in six volumes from 1851 to 1857, and his "Natural History of the Nests and Eggs of British Birds," published in three volumes in 1853. In 1854 he was presented to the rectory of Nunburnholme, which he continued to hold until his death.

A DESTRUCTIVE earthquake has taken place in the island of Samoa. All the buildings are said to have been destroyed. Renewed shocks, accompanied by loud subterranean rumblings, have also occurred at Zante.

ON Sunday a shock of earthquake was experienced in New Zealand. It caused little damage, but was felt in both the North